Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of	)	
	)	
Preparation for International	)	**IC Docket No. 94-31**
Telecommunication Union World	)	
Radiocommunication Conferences	)	

To: The Commission

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED IN RESPONSE TO NOTICE OF INQUIRY

THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED

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July 15, 1994

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SUMMARY

The American Radio Relay League, Incorporated ("the League"), the national non-profit association of amateur radio operators in the United States, submits its comments in response to the Commission's Notice of Inquiry ("the Notice") FCC 94-96, 59 Fed. Reg. 25873, released May 5, 1994. The Notice concerns preparation for ITU World Radiocommunication Conferences beginning with WRC-95, now scheduled to convene in November of 1995.

The League welcomes the opportunity to comment on, and to participate in, the United States' preparation for ITU World Radiocommunication Conferences. The League, the representative of the Amateur and Amateur-Satellite Services at a number of international conferences leading up to WRC conferences, has been involved in and has a distinct interest in a number of issues relevant to WRC-95 and subsequent conferences.

The League supports the planned review of the Voluntary Group of Experts at WRC-95, and believes that the work of the VGE has been a valuable exercise. The simplification of the text of the Radio Regulations is useful and practical, and the recommendations of the VGE will, in general, facilitate domestic allocations decision-making. To the extent that any administration should propose a substantive change such as the elimination of the Morse Code requirement for amateur licensing and operation below 30 MHz, the effort should be actively resisted by the United States.

There is little effect on the amateur services in the process of facilitation of implementation of MSS allocations, except that in finding adequate spectrum for feeder links for MSS facilities should clearly avoid any amateur spectrum, as there appears no compatibility between the two uses. The United States should place on the preliminary agenda for the 1999 WRC the implementation of an international amateur radio permit. Finally, the United States should make permanent an industry/agency conference preparation committee structure, reflective of the continuous planning processes necessary to address the regular WRCs.

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To: The Commission

COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED IN RESPONSE TO NOTICE OF INQUIRY

The American Radio Relay League, Incorporated ("the League"), the national non-profit association of amateur radio operators in the United States, by counsel, hereby respectfully submits its comments in response to the Commission's Notice of Inquiry ("the Notice") FCC 94-96, 59 Fed. Reg. 25873, released May 5, 1994. The Notice concerns preparation for ITU World Radiocommunication Conferences beginning with WRC-95, now scheduled to convene in November of 1995. In response to the Notice, the League states as follows:

I. Introduction

1. The League welcomes the opportunity to comment on, and to participate in, the United States' preparation for ITU World Radiocommunication Conferences. The League, the representative of the Amateur and Amateur-Satellite Services at a number of international conferences leading up to WRC conferences, has been involved in and has a distinct interest in a number of issues

relevant to WRC-95 and subsequent conferences. It is understood that the work of WRC-95 will include the development of a recommended agenda for WRC-97 and a preliminary agenda for WRC-99. Thus, identification of any new issues that would be timely for those conferences is sought in the instant proceeding. There are a number of such issues of great importance to the amateur services, as outlined herein.

2. The League has heretofore submitted comments in ET Docket No. 93-198, the Inquiry which solicited comments contributing to the United States' preparation for WRC-93, which also identified issues for inclusion on the agendas for WRC-95 and WRC-97, and the United States' positions thereon. Some of the issues identified by the League in those comments are relevant to the instant proceeding. Furthermore, the League, on November 6, 1992, identified for NTIA, in NTIA Docket No. 920532-2132, a list of spectrum needs for the amateur and amateur-satellite services for the near-term. That document is reasonably comprehensive. It is appropriate in this proceeding to provide that same information to the Commission, so that, in formulating United States' positions and reasonable agendas for WRC-97 and WRC-99, the Commission may find opportunities to provide for expanded public service capabilities for amateur radio. Accordingly, a copy of the League's submission to NTIA is attached hereto as Exhibit A, and is incorporated herein by reference. It is requested that the Commission consider the same when formulating agenda items for WRC-97 and preliminary recommendations for WRC-99.

II. Review of the Report of the VGE

3. While the complete output of the ITU Voluntary Group of Experts has not yet been distributed, the League believes the effort to simplify the Radio Regulations, without changing the substance thereof, has been a useful exercise. Certain recommendations of a general nature are endorsed by the League. For example, standardization of texts for certain footnotes, such as those related to the Radio Astronomy Service is a distinctly useful procedure. Such standardization will simplify domestic implementation of those footnotes in domestic allocations proceedings. It is especially useful in defining necessary protection criteria for both passive and active radio services in shared bands.

4. During the VGE meetings, there were a number of issues raised that might have affected the amateur and amateur-satellite services. These included the following:

(a) The possibility of halving the number of radio services was considered. Had it been adopted, this might have resulted, inter alia, in the combining of the amateur and amateur-satellite services. Ultimately, the idea was rejected on the basis that terrestrial and satellite services have different technical and operational characteristics, and they therefore require different treatment in the Radio Regulations.

(b) One administration suggested the elimination of the current requirement of demonstration of proficiency in Morse code as a requirement for licensing in the amateur services for

operation at frequencies below 30 MHz. This provision was not adopted.

5. It is possible, though not now anticipated, that one or more administrations might propose the elimination of the Morse code requirement from the Radio Regulations[1] at an upcoming WRC; in the context of the scheduled review of the report of the VGE or otherwise. The League is firmly convinced that this requirement should be maintained, in order to ensure that radio amateurs maintain operational proficiency in Morse code. While it is true that Morse code is no longer used in international aeronautical mobile communications, and its regular use is decreasing in the maritime mobile and fixed services, it continues to play an important part in some applications, particularly emergency communications. Morse code is still thriving as a communications medium in the amateur services, especially at HF.[2] It remains a

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[1] RR 2735 states that "Any person seeking a license to operate the apparatus of an amateur station shall prove that he is able to send correctly by hand and to receive correctly by ear, texts in Morse code signals. The administrations concerned may, however, waive this requirement in the case of stations making use exclusively of frequencies above 30 MHz."

[2] In general, the HF environment is quite different from that of the VHF and higher frequencies. At HF, international communication is the rule rather than the exception; The bands available to amateurs are narrow relative to the peak demand for access; and propagation conditions vary from moment to moment, creating a fluid interference environment that requires cooperation between the operators sharing a limited spectrum resource. Unlike situations in other HF services, stations in the Amateur Service are not assigned to specific operating frequencies. Aside from the dictates of common courtesy, amateur stations all have an equal right to operate and are not required to protect one another from interference; if a "zero tolerance" interference standard were to apply to amateur operation, where an operator could not transmit if any interference whatsoever to other operators would result, the

means of transcending international language barriers due to the commonality of the terms used by amateur Morse operators, and permits reliable long distance communications using the most rudimentary equipment during emergencies, or in areas of the world where more sophisticated equipment is unavailable. Because one of the principal benefits of amateur communications is in its inherent ability to enhance international goodwill, and given the ability of Morse code amateur communications to transcend language barriers, it is not surprising that amateurs generally firmly favor retention

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amateur bands would have to be several times their present width to accommodate the present demand. Within their domestic regulations and a loose framework of voluntary band plans, radio amateurs are free to choose their operating frequencies on a dynamic basis, adjusting their operating to the prevailing conditions of the moment so as to minimize mutual interference to the greatest extent practicable. It is only because amateurs enjoy such flexibility that they are able to coexist in the relatively narrow bands afforded to them.

In such an environment, it is important that all operators possess the capability to communicate with one another. Otherwise, emergency communications might easily fall victim to unintentional interference and calls for assistance might go unheeded simply because the operator of the station receiving the call did not understand it. Yet it would be inappropriate to require, in an avocation, that all operators be capable of speaking and understanding a common language, nor is it desirable for the Amateur Service to adopt the extensive regulations that have been used in the mobile services in an imperfect attempt to provide an equivalent disaster communications capability.

The Morse Code provides an effective substitute for such a common language, and is far easier to learn. The international regulations do not specify a minimum level of proficiency, leaving this to the individual administrations. The intent, however, is clear: radio amateurs who share the international resource that is the HF spectrum are expected to be able to conduct rudimentary communication among themselves, without regard to language barriers or to limitations of their equipment, as a condition of access. Without such a common capability, there could be no reasonable expectation that the effective sharing of this resource would continue.

of Morse code as an international requirement for licensing. The League has adopted such a policy, and the Commission has endorsed retention of the policy in past years.[3]

6. While there may be need for reformatting to simplify the Radio Regulations, the League believes there is no need for any substantive change to the provisions of the Radio Regulations governing the amateur services. The U.S. is strongly urged to seek no change (NOC).

III. Mobile-Satellite Service Issues

7. Important issues for WRC-95 and likely at WRC-97 are mobile-satellite service (MSS) spectrum and dates for bringing new

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[3] The League's policy on this subject was most recently addressed in January of 1993, when the following policy was adopted by the Board of Directors:

> WHEREAS, proficiency in Morse code has been an international requirement for many decades, and
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> WHEREAS, Morse code is the international language that fosters communications between peoples with differing languages, and
>
> WHEREAS, Knowledge of the Morse code has, for decades, proven to be of positive value to the Amateur Radio Service worldwide; now, therefore, the American Radio Relay League strongly
>
> REAFFIRMS its continued support for a demonstrated proficiency in the International Morse code as part of the license requirements below 30 MHz, and
>
> DECLARES its desire that demonstrated proficiency in the International Morse code should remain in the ITU Rules as a requirement for all ham operation below 30 MHz, and hereby
>
> INSTRUCTS all ARRL representatives to continue to insist before all national and international bodies that there be no modification of the present Morse code proficiency requirement for operation below 30 MHz.

allocations into use. The League urges that any new MSS service link or associated feeder link spectrum be found outside the bands allocated to the amateur and amateur-satellite services. The Commission should seek to avoid accommodation of new GSO or non-GSO feeder links by disaccommodating further the amateur services in any extant allocations; indeed, it is specific Congressional policy that the Commission avoid actions which would detract from amateur public service communications.[4]

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[4] See, Public Law 100-594, 102 Stat. 3021, the Federal Communications Commission Authorization Act of 1988. Therein, Congress stated as follows:

> (a) The Congress finds that--
> (1) more than four hundred and thirty five thousand four hundred radio amateurs in the United States are licensed by the Federal Communications Commission upon examination in radio regulations, technical principles, and the international Morse code;
> (2) by international treaty and the Federal Communications Commission regulation, the amateur is authorized to operate his or her station in a radio service of intercommunications and technical investigations solely with a personal aim and without pecuniary interest;
> (3) among the basic purposes for the Amateur Radio Service is the provision of voluntary, noncommercial radio service, particularly emergency communications; and
> (4) volunteer amateur radio emergency communications services have consistently and reliably been provided before, during, and after floods, tornadoes, forest fires, earthquakes, blizzards, train wrecks, chemical spills, and other disasters.
> (b) It is the sense of Congress that--
> (1) it strongly encourages and supports the Amateur Radio Service and its emergency communications efforts; and
> (2) Government agencies shall take into account the valuable contributions made by amateur radio operators when considering actions affecting the Amateur Radio Service.

IV. International Amateur Radio Permit

8. Work is underway within the Inter-American Telecommunication Commission (CITEL) to develop an international amateur radio permit, as a method of allowing radio amateurs licensed in one country to operate while visiting another country. CITEL Permanent Technical Committee III (PTC.III), in future to be known as Permanent Consultative Committee III (PCC.III) has given its approval in principle and will consider the matter in greater detail at its Ottawa meeting in late August, 1994.

9. The League formerly suggested that the United States should recommend an international amateur radio permit as an item on the WRC-97 agenda. United States citizens who are licensed radio amateurs frequently travel to foreign countries and operate their stations therein. Presently, United States amateurs can operate in Canada, possessed only of their U.S. licenses, and Canadians have the same privileges in the United States, possessed only of their Canadian licenses. In many countries other than Canada, however, it is first necessary to obtain an operating permit, well in advance, from each administration in the countries visited. Such operation is based normally on bilateral or multilateral agreements to which the U.S. is a signatory. There are a few countries, having no agreement with the United States, that permit U.S. citizens to operate only as a courtesy. Other countries do not permit U.S.-licensed amateurs to operate in their jurisdictions. The United States does not permit operation by visiting amateurs from countries that do not have an agreement with the United States,

unless those persons sit for a comprehensive United States amateur license examination.

10. As noted in Docket 93-198, the League receives more than 100 telephonic or written inquiries per week from amateur operators concerning regulatory procedures for obtaining operating authority in foreign countries. This represents, it is estimated, less than half of the number of amateurs who pursue foreign operating authority. During the past fiscal year, the Commission issued 2,848 reciprocal operating permits to foreign amateurs to permit them to operate their stations in the United States. These numbers are increasing each year. Implementation of an international amateur radio permit would eliminate burdensome paperwork and delays on the part of the individuals; reduce administrations' regulatory burden and cost; facilitate international goodwill, long a hallmark of the amateur services; and generally promote amateur radio operation.

11. WRC-99 may be the appropriate conference to consider an international amateur radio permit[5]. Such a permit could be based on the CITEL model, taking into account European Conference of Postal and Telecommunications Administration (CEPT) Recommendations T/R 61-01 and 61-02.

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[5] The League appreciates the Commission's admonishment at paragraph 40 of the Notice, to the effect that the number of issues included on the preliminary agenda for WRC-97 make it difficult to dedicate the time and resources necessary to consider fully each issue. In light of this, it may be that the international amateur radio permit may not be mature for consideration at WRC-97. It is anticipated, however, that the 1999 conference would be an appropriate forum for consideration thereof.

V. Preparatory Meetings

12. The League is prepared to participate in the work of the Industry Advisory Committee, ITU Task Groups related to conference preparation, Conference Preparatory Meetings (CPMs) and the U.S. delegation to future conferences.

13. In light of the plan to hold WRCs every two years, the League strongly endorses the concept of a permanent U.S. radio conference preparatory structure involving the Federal agencies and representatives of the communications industry. It is no longer appropriate or practical to dismantle the U.S. preparatory structure after a conference and reconstitute it for the next conference. The League noted in reply comments in ET Docket 93-198 that NTIA had stated in July of 1993 that there would be formed a permanent committee, involving members of the industry, would be convened in order to cooperatively develop proposals for future WRCs, which would be convened following WRC-93. This has not yet occurred, but should, as an acknowledgement of the need for

continuous planning for conferences[6]. The comments in Docket 93-198 and elsewhere reveal widespread support for this concept.

VI. Conclusions

14. The League supports the planned review of the VGE at WRC-95, and believes that the work of the VGE has been a valuable exercise. The simplification of the text of the Radio Regulations is useful and practical, and the recommendations of the VGE will, in general, facilitate domestic allocations decision-making. To the extent that any administration should propose a substantive change such as the elimination of the Morse Code requirement for amateur licensing and operation below 30 MHz, the effort should be actively resisted by the United States. There is little effect on the amateur services in the process of facilitation of implementation of MSS allocations, except that in finding adequate spectrum for feeder links for MSS facilities should clearly avoid any amateur spectrum, as there appears no compatibility between the two uses. The United States should place on the preliminary agenda for the

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[6] The League understands that the Commission has acknowledged the need for a continuous process of conference preparation, as per paragraph 44 of the Notice. Maintenance of an open docket in this proceeding is an important step in this process. However, the League notes the urging of AMSC Subsidiary Corporation, COMSAT, Iridium, Inc., Motorola and others, for the formation of an Industry Advisory Committee. The formation by IRAC of the Radio Conference Subcommittee (RCS) to coordinate the views of the agencies in U.S. conference preparations is not aimed at the participation of the communications industry in conference preparation. Nor is an open docket sufficient. The League believes that the establishment of a joint industry/agency conference preparation committee is critical to effective representation by the United States of its communications industry. The League has traditionally served on such committees, and wishes to continue to participate.

1999 WRC the implementation of an international amateur radio permit. Finally, the United States should make permanent an industry/agency conference preparation committee structure, reflective of the continuous planning processes necessary to address the regular WRCs.

Therefore, the foregoing considered, the American Radio Relay League, Incorporated respectfully requests that the Commission take into account the League's comments when formulating its position looking toward WRC-95, and in the establishment of the agenda for WRC-97 and the preliminary agenda for WRC-99.

Respectfully submitted,

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July 15, 1994

EXHIBIT A

Before the
DEPARTMENT OF COMMERCE
NATIONAL TELECOMMUNICATIONS AND INFORMATION ADMINISTRATION
Washington, D.C. 20230

In the Matter of	)	
	)	
Current and Future Requirements for the Use of Radio Frequencies in the United States	)	**Docket No. 920532-2132**

To: The Assistant Secretary for Communications and Information

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COMMENTS OF THE AMERICAN RADIO RELAY LEAGUE, INCORPORATED

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November 6, 1992

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Before the
DEPARTMENT OF COMMERCE
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Washington, D.C. 20230

In the matter of	)	
	)	
Current and Future Requirements for the Use of Radio Frequencies in the United States	)	**Docket No. 920532-2132**

To: The Assistant Secretary for Communications and Information

COMMENTS OF THE
AMERICAN RADIO RELAY LEAGUE, INCORPORATED

I. INTRODUCTION

1. The American Radio Relay League, Incorporated (the League) hereby respectfully submits its comments in response to the Administration's Notice of Inquiry, published in the Federal Register, June 12, 1992, (57 Fed. Reg. 25010, et seq.) which sought public comment concerning current and future requirements for the radio spectrum and technology trends that would impact use of the radio spectrum.

2. The League is the national non-profit association of amateur radio operators licensed by the Federal Communications Commission. These comments are submitted on behalf of its more than 160,000 members and in the interest of over 580,000 licensees in the Amateur Radio Services in the United States. The League's headquarters in Newington, Connecticut also serves as the International Secretariat for the International Amateur Radio Union (IARU), which is an association of national amateur radio societies

in 128 countries and participates in the work of the International Telecommunication Union.

II. BACKGROUND

3. Internationally, the *amateur service* is defined as a *radiocommunication service* for the purpose of self-training, intercommunication and technical investigations carried out by amateurs, that is, by duly authorized persons interested in radio technique solely with a personal aim and without pecuniary interest. The *amateur-satellite service* is separately defined as a *radiocommunication service* using *space stations* on earth *satellites* for the same purposes as the *amateur service*.[1]

4. Within the United States, the basis and purpose of the amateur services are: public service, particularly emergency communications; advancement of the radio art; advancing technical and communication skills; training operators, technicians and electronics experts; and enhancing international goodwill.[2]

5. In August 1992, Hurricane Andrew devastated parts of Southern Florida and Louisiana, and Hurricane Iniki hit the State of Hawaii. Once again, amateur stations demonstrated their ability to provide emergency communications in the hours immediately following a major natural disaster when normal channels are lost or

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[1] Article 8, International Telecommunication Union Radio Regulations.

[2] 47 CFR §97.1.

overloaded. ITU Resolution 640 formally recognizes the value of this resource. The amateur service has repeatedly provided disaster communications domestically and internationally following calamities including volcanoes, earthquakes and tropical storms.

6. From the earliest days of radio and continuing to the present, the amateur services have contributed to the state of the radio art. Amateurs have demonstrated the feasibility of a variety of radio wave propagation modes, such as meteor scatter, auroral propagation, tropospheric ducting, sporadic-E and transequatorial spread-F. Low cost packet radio pioneered by radio amateurs since the late 1970s is now in use by other services throughout the world. New data transmission techniques, such as those known as CLOVER and PACTOR, are now being developed to improve HF communications efficiency, again at low cost. Amateurs are actively involved in experimentation in spread spectrum and digital signal processing.

7. Since 1961, the amateur-satellite service has designed, constructed and arranged for the launch of 33 communications satellites in low Earth and highly elliptical orbits. In a presentation to the Federal Communications Commission, on December 13, 1990, the Private Radio Bureau stated:

> Amateurs have pioneered communications by low Earth orbiting satellites, a technology just now being explored commercially.[3]

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[3] FCC Private Radio Bureau introduction to PR Dockets 90-55 and 90-356.

8. Small satellite technology developed in the amateur-satellite service is being applied directly to non-amateur low Earth orbit satellites in the mobile-satellite service. In February, 1992, the FCC granted Pioneer's Preference to Volunteers in Technical Assistance (VITA) on the basis that it "pioneered use of loworbit satellites for civilian data communications at VHF frequencies."[4] The grant further stated:

> VITA, with the Radio Amateur Satellite Corporation, designed and constructed a rudimentary satellite packet radio package that was launched in March 1984 aboard scientific satellite built by the University of Surrey in Guilford, England. The test was successful, and VITA built upon the experiment's success by developing a more advanced system. It applied to this Commission in 1988 for an experimental license for a ground station to serve that more advanced system. Thus, VITA actually has operated an experimental LEO communication system.[5]

9. Training of radio operators and technicians has been a part of the amateur services from the earliest days of radio. Countless telecommunications professionals got their hands-on experience through amateur radio. Since at least the 1970s, amateur radio has been taught in some school classrooms, typically, but not always, as an extracurricular activity. In 1983, Owen Garriott became the first astronaut to talk to Earth, using amateur radio, from the U.S. Space Shuttle Columbia. The seven subsequent

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[4] *See FCC ET Docket No. 91-280*, §16, released Feb. 11, 1992.

[5] *id.*

manned missions by U.S. shuttles and Russian *Mir* spacecraft carrying amateur radio have been increasingly devoted to educational purposes. This program, known as Shuttle Amateur Radio Experiment or SAREX, is now a regular educational activity involving schools in the U.S. and other countries.

10. Amateur radio offers direct, person-to-person communications between citizens of different countries. Countless friendships have resulted from amateur radio contacts. Experimentation with propagation and new systems is now largely international, not only between North America, Europe and Japan, but lately involving developing countries.

III. SIZE OF USER BASE

11. There are more than 580,000 licensed amateur radio operators in the United States and an estimated 2.4 million licensed amateurs worldwide. Within the United States, the annual growth rate was 4.8%, but since the introduction of a class of license not requiring proficiency in Morse code, the rate has increased to its present level of 8.7%. Worldwide, the number of amateurs is growing at a rate of 7%.

12. The worldwide amateur population impacts U.S. amateurs in several respects. For one thing, frequencies that propagate across international borders are a resource that is shared regionally and worldwide. As propagation conditions go through their diurnal, seasonal and solar activity cycles, frequency band loading changes dramatically. For another, a large worldwide amateur population

permits economies of scale, which directly affects the availability of equipment. For yet another, the amateur services' ability to provide emergency communications in international disasters is facilitated by amateur stations being widely distributed throughout the world. Accordingly, the amateur services are essentially international in character, and the U.S. domestic amateur service should not be viewed in isolation.

IV. VOLUME OF INFORMATION FLOW

13. Because of its decentralized nature, any estimate of volume of flow would be difficult to obtain and then of only limited value. Furthermore, there is a mixture of transmission modes (primarily voice and Morse code but with growing amounts of radioteleprinter, packet radio and image transmissions, each of which has different information rates and bandwidths).

14. Nevertheless, it is possible to obtain a rough indication of information flow by observing band loading, which varies by time of day and day of the week corresponding to non-working hours of the licensees. During evenings and weekends, all HF amateur service bands that propagate ionospherically are heavily occupied and sometimes saturated. This is especially true of the band 14,000-14,350 kHz and the 7 MHz band (7,000-7,300 kHz in Region 2, 7,000-7,100 kHz in Regions 1 and 3).

15. At VHF, the 2 meter band (144-148 MHz in Regions 2 and 3, 144-146 MHz in Regions 1) is heavily occupied. Most amateurs throughout the world have operating privileges in this band. The

utility of this band is improved greatly by the use of FM repeaters, which provide ranges of 100 km for hand-held transceivers. The segment 145.8-146 MHz is used by most amateur satellites.

16. While the bands mentioned above are considered workhorses, the other bands allocated to the amateur services are occupied heaviest at lower frequencies and less so with increase in frequency. This is not unlike the situation with other radio services. Over time, there is a gradual migration upward as the lower bands become saturated. In general, however, as the frequency of the band is increased, the terrestrial range is decreased. Radio relays can extend the communication range greatly, particularly if satellites are used.

V. ESTIMATED AMOUNT OF SPECTRUM REQUIRED

17. Amateur service allocations are based, in part, on the desirability of having a choice of relatively narrow bands with different propagation properties distributed throughout the spectrum. At MF and HF, the bands provide for various path distances at different parts of the solar cycle. Because amateurs use relatively low power and use transmission modes subject to multipath interference, it is desirable to operate at a frequency at or just under the maximum usable frequency (MUF) for that path.

18. Like other services, the amateur services prefer exclusive primary allocations. Nevertheless, amateur service secondary allocations are highly valued and of great utility. It